REMARKS

I. INTRODUCTION

Claims 1 and 11 have been amended. Thus, claims 1-5, 7-9 and 11-18 remain pending in the application. The Applicants respectfully submit that no new matter has been added. In view of the following remarks, it is respectfully submitted that all of the presently pending claims are allowable.

II. FOREIGN PRIORITY DOCUMENT

The Examiner has indicated that a certified copy of the priority document, as filed by the Applicants on September 17, 2004, could not be found. Applicants respectfully submit that a certified copy of the United Kingdom Patent Application No. 9805646.8 filed on March 18, 1998 was submitted to the USPTO on September 17, 2004 along with an Amendment in response to the Office Action mailed on June 7, 2004. However, for the Examiner's convenience, a copy of the certified copy of the United Kingdom Patent Application No. 9805646.8 is submitted herewith.

III. THE OBJECTION TO CLAIMS 1 AND 11 SHOULD BE WITHDRAWN

The Examiner objects to claims 1 and 11 because the limitation "the composite superconducting tape is diffusion bonded together" is not clear. Claims 1 and 11 have been amended to address this objection. Therefore, the Applicants respectfully request that the Examiner withdraw the objection to claim 1.

IV. THE 35 U.S.C. §102 REJECTIONS SHOULD BE WITHDRAWN

Claims 1, 2, 9, 11, 12 and 18 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,110,606 to Scudiere et al. (hereinafter "Scudiere").

Scudiere discloses a laminate for coating superconducting ceramic tapes. The surfaces of these superconducting ceramic tapes tend to have manufacturing defects and are vulnerable to cryogenic infiltration and damage. (*See* Scudiere, col. 3, lines 13-15, 40-44). Scudiere coats the surface of the tapes with a non-porous metallic laminate, such as solder (*See id.* at col. 1, lines 49-52 and col. 3, lines 17-20). The resulting tape is sealed from the cryogenic environment, creating a barrier which prevents the superconducting tapes from cryogen infiltration and damage. The resulting tapes also have improved tolerance to tensile and bending stresses and can be cooled with less risk for degradation. (*See id.* at col. 1, lines 54-61).

Amended independent claim 1 of the present invention recites a composite superconducting tape comprising:

> a multiplicity of constituent superconducting tapes stacked parallel to one another with major faces in contact so as to form a series of stacks, and wherein at least some of the constituent superconducting tapes have widths not greater than half a width of the composite superconducting tape and are laid edge to edge with each other, the composite superconducting tape including at least one tape bridging the stacks and wherein the **constituent composite superconducting tapes are <u>interbonded by interfusion</u>**.
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> (*Emphasis added.*)

The Examiner had currently identified that "Scudiere et al., does not disclose the constituting superconducting tape are diffusion bonded together." (Final Office Action, p.4). However, the Examiner states that "diffusion bonding is a process limitation in a product claim." Thus, as the Examiner will ascertain, the Applicants have amended independent claim 1 to reflect a structural limitation, as would be understood by one of ordinary skill in the art, implicit from the process limitation of diffusion bonding.

Therefore, the present invention, as claimed by amended independent claim 1, is a

composite superconducting tape wherein **the constituent composite superconducting tapes are interbonded by interfusion.** On the contrary, Scudiere specifically discloses a laminate to a superconducting ceramic tape or stacks of superconducting ceramic tapes. (*See* Scudiere, col. 3, lines 9-12). More particularly, Scudiere discloses laminating superconducting ceramic tapes or stacks of tapes which have surfaces vulnerable to cryogenic infiltration and damage. (*See id.* at col. 3, lines 12-15; col. 5, lines 31-36; and Fig. 4). Scudiere coats the vulnerable surface so as to seal the surface. Scudiere never suggests forming a composite superconducting tape by interbonding the constituent superconducting tapes by interfusion. Rather, Scudiere laminates the surfaces of constituent superconducting tapes and seals the tapes away from an external environment. The laminate is also interleaved between component tapes and provides a barrier against external interactions, such as interfusion between component tapes. Thus, there is no teaching or suggestion in Scudiere that "the constituent composite superconducting tapes are interbonded by interfusion."

In addition, interbonding the constituent composite superconducting tapes by interfusion eliminates the need for metal wrapping tape. It also eliminates the inevitable gaps and overlapping between the turns of the wrapping tape that create kinks in the filament that destroy local grain alignment. Thus, as compared to traditional composite superconducting tapes, composite superconducting tape formed by interfusing the constituent tapes would be less likely to suffer from a degradation of alignment, which is one of the causes to decreased overall current capacity. (*See* Specifications, p. 2, lines 5-9). Furthermore, the interfusion and stacking provides increased AC current carrying capabilities. The increased current carrying capabilities are thought to be in response to increased coupling between the interfused filaments.

In light of the above, the Applicants respectfully submit that claim 1 is not anticipated by Scudiere and request that the §102 rejection of claim 1 be withdrawn. Because claims 2 and 9 depend from and includes all of the limitations of claim 1, for at least the reasons discussed above, the Applicants respectfully submit that claims 2 and 9 are also allowable and request that

the Examiner withdraw the §102 rejections to these claims as well.

Claim 11 recites a composite superconducting tape constructed from a plurality of superconducting tapes each having two opposite major faces and two opposite edges extending between the major faces, the composite superconducting tape including:

> a first stack having a plurality of the superconducting tapes wherein each superconducting tape in the first stack has at least one major face in contact with a major face of an adjacent superconducting tape in the first stack;
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> a second stack having a plurality of superconducting tapes wherein each superconducting tape in the second stack has a least one major face in contact with a major face of an adjacent superconducting tape in the second stack, wherein at least some of the superconducting tapes have widths not greater than half a width of the composite superconducting tape; and
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> at least one bridging tape spanning between the first and second stacks for maintaining the first and second stacks in a substantially parallel edge-to-edge configuration; and
>
> wherein the **constituent composite superconducting tapes are interbonded by interfusion**.

(*Emphasis added.*)

The arguments presented above for claim 1 apply as well to the similar limitations recited in claim 11. For at least the reasons discussed above, the Applicants respectfully request that the Examiner withdraw the §102 rejection to claim 11 as well. Furthermore, the Applicants respectfully request that the Examiner also withdraw the rejects to claims 12 and 18, which depend and include all the limitations of claim 11.

VIII. THE 35 U.S.C. §103 REJECTIONS SHOULD BE WITHDRAWN

Claims 4-5, 7, 8 and 14-17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Scudiere as applied to claims 1, 2 and 9 above, and further in view of U.S. Patent No.

5,801,124 to Gamble et al. (hereinafter "Gamble"). As discussed above, Scudiere does not teach or suggest each and every element of claims 1 and 11. Because claims 4, 5, 7, 8 and 14-17 depend from claims 1 and 11, the Applicants respectfully submit that the deficiencies of Scudiere also apply to these claims and request that the §103 rejections be withdrawn.

Claims 3 and 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Scudiere and Gamble, and further in view of U.S. Patent No. 6,305,069 to Fujikami et al. and U.S. Patent No. 6,218,340 to Riley. For the reasons discussed above, Scudiere does not teach or suggest each and every element of claims 1 to 11. Because claims 3 and 13 depend from and include all of the limitations of claims 1 and 11, the Applicants respectfully submit that the deficiencies of Scudiere also apply to claims 3 and 13. Thus, the Applicants respectfully submit that claims 3 and 13 are allowable and request that the §103 rejections be withdrawn.

IX. CONCLUSION

In light of the foregoing, the Applicants respectfully submit that all of the pending claims are in condition for allowance. All issues raised by the Examiner have been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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By: _____

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